

Claims

1. A metal working machine for reboring or refacing a workpiece comprising, in combination:

(a) an elongated, boring bar member;

(b) first and second mounting brackets attachable to the workpiece at longitudinally spaced locations therealong, each said mounting bracket including bearings in which the boring bar member is journaled for rotation;

(c) an annular cutting head member disposed about the boring bar member and rotatable therewith, the annular cutting head member having a slide supporting a tool bit that is adapted to be moved in a radial direction with respect to the boring bar member's longitudinal axis;

(d) a first drive means adapted to be coupled to the boring bar member for rotating the boring bar member and the cutting head member about the longitudinal axis of the boring bar member;

(e) a second drive means including control means for selectively longitudinally translating the cutting head member axially along the boring bar member or radially translating the slide and tool bit of the annular cutting head member with respect to the longitudinal axis of the boring bar member.

2. The metal working machine of claim 1 wherein the first drive means includes one of an electrical motor, a hydraulic motor and an air motor.

3. The metal working machine of claim 1 further including a plurality of set screws extending radially through the first and second mounting brackets for locking the machine in place on said workpiece.

4. The metal working machine of claim 1 wherein the boring bar member includes a longitudinal groove formed inwardly of a peripheral surface thereof.

5. The metal working machine of claim 4 and further including an elongated drive rod disposed in the longitudinal groove and journaled for rotation therein.

5 6. The metal working machine as in claim 1 wherein the control means includes a manually actuatable control shaft that controls the selection of axial movement and radial movement of the cutting head member relative to the boring bar member.

10 7. The metal working machine as in claim 1 wherein the second drive means includes:

(a) a first threaded shaft disposed in said longitudinal groove in the boring bar member and journaled for rotation therein;

15 (b) a threaded nut on the first threaded shaft and cooperating with the annular cutting head member and adapted to displace the annular cutting head member along the longitudinal axis of the boring bar member;

(c) a second threaded shaft journaled for rotation in the cutting head member about an axis that is perpendicular to the longitudinal axis of the cylindrical boring bar member; and

20 (d) a threaded nut on the second threaded shaft and cooperating with said slide and adapted to displace the slide in a radial direction dependent on the direction of rotation of the first threaded shaft.

25 8. The metal working machine as in claim 7 and further including a manually shiftable gear mechanism operatively coupled between the first and second threaded shafts for selectively driving the second threaded shaft while stopping displacement of the cutting head member along the longitudinal axis of the cylindrical boring bar member or stopping displacement of the slide while displacing the cutting head member along the longitudinal axis of the cylindrical boring bar member.

9. The metal working machine as in claim 8 wherein the shiftable gear mechanism comprises:

(a) a control shaft mounted in the annular cutting head member, the control shaft having a threaded segment;

5 (b) a stop nut having a tapered edge surface, a tapered bore and a threaded bore, the threaded bore engaging the threaded segment on the control shaft whereby rotation of this control shaft translates the stop nut;

10 (c) an idler shaft having a tapered collar keyed thereto, the tapered collar being inserted through the tapered bore in the stop nut, the idler shaft further having first and second gears mounted thereon and affixed thereto, the first gear cooperating with the gear formed on the threaded nut on said first threaded shaft and the second gear cooperating with a further gear affixed to the second threaded shaft; and

15 (c) an axial feed stop member having a tapered surface adapted to engage with said tapered edge surface of the stop nut when the control shaft is turned in a first direction and to disengage from said tapered surface of the stop nut when the control shaft is turned in a direction opposite said first direction.

20 10. A metal working machine for re boring or refacing a workpiece, comprising, in combination:

(a) an elongated boring bar journaled for rotation about a longitudinal axis between longitudinally spaced mounting brackets, the boring bar having an annular cutting head mounted thereon, the annular cutting head supporting a tool slide; and

25 (b) first drive means coupled to the boring bar for rotating the boring bar about the longitudinal axis; and

(c) second drive means selectively operable to translate the annular cutting head along the boring bar or to impart translation of the tool slide in a radial direction relative to the longitudinal axis of the boring bar.

11. The metal working machine as in claim 10 wherein the second drive means includes a control shaft that arrests longitudinal movement of the cutting head and initiates radial movement to the tool slide when the control shaft is rotated in a first direction and arrests radial movement of the tool slide and initiates longitudinal movement of the cutting head when the control shaft is rotated in a direction opposite the first direction.

12. The metal working machine as in claim 11 wherein the control shaft is disposed in the annular cutting head and includes a threaded segment with a stop nut having a threaded bore for engaging the threaded segment whereby clockwise rotation of the control shaft displaces the stop nut in a first direction and counterclockwise rotation of the control shaft displaces the stop nut in a second direction opposite to the first direction.